

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicant: Bakker, Arjan Franklin

Examiner: Samuel A. Turner

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For: A System for Positioning a Product

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P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Appellant appeals the status of Claims 1 – 9 as presented in response to the final Office Action dated February 23, 2010, and submits this Appeal Brief.

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1. Real Party in Interest

The real party in interest is Koninklijke Philips Electronics, N. V., the assignee of the entire right, title and interest in and to the subject application by virtue of an assignment recorded with the Patent Office on August 7, 2006 at Reel/Frame 018059/0455.

2. Related Appeals and Interferences

Appellant is not aware of any appeals or interferences related to the present application.

3. Status of Claims

- a) Claims 1 – 9 are pending. Claims 1 and 7 are independent.
- b) Claims 1 – 9 stand rejected and are under appeal.

4. Status of Amendments

An amendment under 37 C.F.R. § 1.114, mailed to the USPTO on May 18, 2009, in response to a final Office Action dated February 19, 2009, was entered. A response was filed on October 22, 2009 in reply to a non-final Office Action dated July 23, 2009. In the October 22, 2009 response, the claims were not amended. No other responses/amendments were filed subsequent to the October 22, 2009 response, nor are any amendments pending. The claims listed in section 8 “Claims Appendix” of this Appeal Brief correspond to the claims submitted in Appellant’s response of May 18, 2009.

5. Summary of Claimed Subject Matter¹

The claimed invention, as recited in claim 1, is directed to a system for positioning a product, comprising a chuck for supporting the product (Fig. 4, item 71; page 8, lines 9 – 10), an intermediate stage supporting said chuck (Fig. 4, item 79; page 8, line 6), and a stationary base supporting said intermediate stage (Fig. 4, item 72; page 8, lines 7 – 8), whereby the chuck can move with respect to the intermediate stage in a first direction X (page 8, lines 6 – 7), and the intermediate stage can move with respect to said stationary base in a second direction Y (page 8, lines 8 – 9), furthermore comprising at least a first and a second laser interferometer for measuring the position of the chuck relative to the stationary base (Fig. 4, items 76 and 77; page 8, line 33 – page 9, line 2), a first and a second main part of said respective first and second laser interferometers including optical components for receiving and directing a first and a second laser respectively (page 8, lines 31 – 33), the first and second main parts being attached to said intermediate stage and being movable therewith for measuring respectively the distance between a first elongated plane mirror reflector on the chuck that is elongated in the first direction X (Fig. 3, item 64; page 7, lines 24 – 25; page 8, lines 25 – 28) and an elongated plane mirror reflector on the stationary base that is elongated in the second direction Y (Fig. 4, item 82, page 8, lines 14 – 15), and

¹ *It should be explicitly noted that it is not the Appellant's intention that the currently claimed or described embodiments be limited to operation within the illustrative embodiments described below beyond what is required by the claim language. Further description of the illustrative embodiments are provided indicating portions of the claims which cover the illustrative embodiments merely for compliance with requirements of this appeal without intending to read any further interpreted limitations into the claims as presented.*

the distance between a second elongated plane mirror reflector on the chuck that is elongated in the first direction X (Fig.3, item 64; page 7, lines 24 – 25; page 8, lines 25 – 28) and the elongated plane mirror reflector on the stationary base (Fig. 4, item 82; page 8, lines 14 – 15).

The claimed invention, as recited in claim 7, is directed to a method for positioning a product by means of a system comprising a chuck for supporting the product (Fig. 4, item 71; page 8, lines 9 – 10), an intermediate stage supporting said chuck (Fig. 4, item 79; page 8, line 6), and a stationary base supporting said intermediate stage (Fig. 4, item 72; page 8, lines 7 – 8), whereby the chuck can move with respect to the intermediate stage in a first direction X (page 8, lines 6 – 7), and the intermediate stage can move with respect to said stationary base in a second direction Y (page 8, lines 8 – 9), the method comprising attaching at least a first and a second laser interferometer to the intermediate stage (Fig. 4, items 76 and 77), the first and second laser interferometers respectively further comprising a first and a second main part including optical components for receiving and directing a first and a second laser, the first and second main parts being movable with the intermediate stage (page 8, lines 31 – 33), and measuring the position of the chuck relative to the stationary base (page 8, line 33 – page 9, line 2) by measuring a first distance between a first elongated reflector on the chuck and an elongated reflector on the stationary base using the first laser interferometer (Fig.3, item 64; page 7, lines 24 – 25; page 8, lines 25 – 28; Fig. 4, item 82, page 8, lines 14 – 15), and a second distance between a second elongated reflector on the chuck and the elongated reflector on the stationary base using the

second laser interferometer (Fig.3, item 64; page 7, lines 24 – 25; page 8, lines 25 – 28; Fig. 4, item 82, page 8, lines 14 – 15).

6. Grounds of Rejection to be Reviewed on Appeal

A. Whether claims 1, 2 and 6 – 9 are properly rejected under 35 U.S.C. §103(a) over Hill (US 6,650,419) in view of Cameron (US 5,363,196).

B. Whether claims 3 – 5 are properly rejected under 35 U.S.C. §103(a) over Hill and Cameron and further in view of Hamada et al. (US 6,570,641, hereinafter Hamada).

7. Argument

Appellant respectfully traverses the rejections in accordance with the detailed arguments set forth below.

A. Claims 1, 2 and 6 – 9 are not properly rejected under 35 U.S.C. §103(a) over Hill and Cameron.

It is respectfully submitted that the Examiner failed to establish a prima facie case of obviousness, because as discussed below, a suggestion of all limitations in Appellant's claims is lacking in the combination of Hill and Cameron.

1. Claim 1

Appellant's claim 1, in part, requires:

“the first and second main parts being attached to said intermediate stage and being movable therewith for measuring respectively the distance between a

first elongated plane mirror reflector on the chuck that is elongated in the first direction X and an elongated plane mirror reflector on the stationary base that is elongated in the second direction Y, and the distance between a second elongated plane mirror reflector on the chuck that is elongated in the first direction X and the elongated plane mirror reflector on the stationary base."

(Emphases added)

From the above, the claimed invention includes: (1) a first elongated plane mirror reflector on the chuck that is elongated in the first direction X; (2) an elongated plane mirror reflector on the stationary base that is elongated in the second direction Y; and (3) a second elongated plane mirror reflector on the chuck that is elongated in the first direction X. Therefore, there are three elongated plane mirrors: one elongated in the Y direction on the stationary base and two elongated in the X direction attached to the intermediate stage.

In the Office Action, page 4, the Examiner conceded that Hill fails to teach a second Z-axis measurement interferometer mounted on the stage having a second elongated mirror mounted on the chuck along the X-axis.

However, in the Office Action, pages 4 and 5, the Examiner asserted that it would have been obvious for a skilled person to modify Hill in view of Cameron, by adding an additional Z-axis measurement interferometer together with a second elongated mirror mounted on the chuck along the X-axis. Appellant respectfully traverses such allegation.

Although Cameron teaches using a number of interferometers for redundancy

and for calibration, Cameron does not teaches a second elongated mirror along the X direction, in addition to the first elongated mirror along the X direction. For example, as clearly shown in Fig. 2, Cameron's interferometers 208, 210 and 212 all direct their respective laser beams 222, 224 and 226 to the same "X" mirror surface 204. Since the single "X" mirror surface 204 can provide the needed redundancy and calibration, there is no reason to add an additional mirror along the same direction. Therefore, Cameron fails to cure the deficiency present in Hill with respect to the above claimed features as recited in claim 1.

In the Office Action, page 4 – 5, the Examiner provided an analysis of using a second elongated mirror along the X direction, in addition to the first elongated mirror along the X direction. Note that Examiner's analysis is based on the configuration in Appellant's disclosure, including, for example, support 306, interferometer 308, elongated mirror 340 and base mirror 310. However, Appellant submits that such analysis is not taught or suggested by either of Hill or Cameron. Furthermore, Appellant respectfully submits that this is impermissible hindsight analysis. That is, had it not been for the disclosure of the present invention requiring a first and a second elongated mirror along the same direction, such analysis would not have been needed or carried out by a skilled person in the art. Clearly, Hill and Cameron fail to teach or suggest two elongated mirror along the same direction. Neither does Hill nor Cameron provide a reason to use a second elongated mirror along the X direction, in addition to the first elongated mirror along the same X direction.

In view of at least the foregoing, Appellant submits that it is not obvious for a skilled person to modify Hill in view of Cameron to arrive at the claimed invention.

Therefore, claim 1 is patentable over Hill and Cameron, and the rejection should be reversed.

2. Claim 7

Claim 21, in part, also requires:

“measuring the position of the chuck relative to the stationary base by measuring a first distance between a first elongated reflector on the chuck and an elongated reflector on the stationary base using the first laser interferometer, and a second distance between a second elongated reflector on the chuck and the elongated reflector on the stationary base using the second laser interferometer.” (Emphases added)

Independent claim 7 is different from and should be interpreted independent of claim 1. However, Appellant essentially repeats the above arguments for claim 1 and applies them to the specific features and their interpretation as required by claim 7, pointing out why Hill and Cameron fail to teach or suggest the above claimed features. Therefore, for at least the above reasons, claim 7 is patentable over Hill and Cameron, and the rejection should be reversed.

3. Claim 2, 6, 8 and 9

Claims 2, 6, 8 and 9 respectively depends from either claim 1 or 7, and thus inherits all the respective features of claims 1 or 7. Accordingly, since claims 1 and 7 are patentable over Hill and Cameron, dependent claims 2, 6, 8 and 9 are also allowable by virtue of their dependency, as well as the additional subject matter recited therein and the rejection of claims 2, 6, 8 and 9 should be reversed.

B. Claims 3 – 5 are not properly rejected under 35 U.S.C. §103(a) over Hill and Cameron and further in view of Hamada.

Appellant submits that Hamada does not in any way cure the deficiencies present in the combination of Hill and Cameron as discussed above with respect to claim 1. Claims 3 – 5 depend from claim 1, and thus inherit all the features of claim 1. Accordingly, claims 3 – 5 are also allowable by virtue of their dependency, as well as the additional subject matter recited therein and the rejection of claims 3 – 5 should be reversed.

Conclusion

None of the cited references, either taken singly or in combination, teach or suggest all of the claim limitations of the pending claims. Accordingly, it is respectfully requested that the Board reverse the rejection of claims 1 – 9 under 35 U.S.C. §103(a).

Respectfully submitted,

By: /Hay Yeung Cheung/
Hay Yeung Cheung
Reg. No. 56,666
Myers Wolin, LLC
973-401-7157

Please direct all correspondence to:
Corporate Counsel
US PHILIPS CORPORATION
P.O. Box 3001
Briarcliff Manor, NY 10510-8001

8. CLAIMS APPENDIX

1. (Previously Presented) A system for positioning a product, comprising a chuck for supporting the product, an intermediate stage supporting said chuck, and a stationary base supporting said intermediate stage, whereby the chuck can move with respect to the intermediate stage in a first direction X, and the intermediate stage can move with respect to said stationary base in a second direction Y, furthermore comprising at least a first and a second laser interferometer for measuring the position of the chuck relative to the stationary base, a first and a second main part of said respective first and second laser interferometers including optical components for receiving and directing a first and a second laser respectively, the first and second main parts being attached to said intermediate stage and being movable therewith for measuring respectively the distance between a first elongated plane mirror reflector on the chuck that is elongated in the first direction X and an elongated plane mirror reflector on the stationary base that is elongated in the second direction Y, and the distance between a second elongated plane mirror reflector on the chuck that is elongated in the first direction X and the elongated plane mirror reflector on the stationary base.

2. (Previously Presented) A system as claimed in claim 1, the elongated plane mirror reflector on the stationary base having a length larger than the maximal displacement of the intermediate stage in said second direction Y.

3. (Previously Presented) A system as claimed in claim 1, further comprising a third laser interferometer having a main part that is attached to said stationary base, the main part including optical components for receiving and directing a third laser for measuring the distance between a third elongated reflector on the chuck that is elongated in the first direction X and the main part on the stationary base.

4. (Previously Presented) A system as claimed in claim 1, further comprising three laser interferometers each having a main part, the respective main parts of the three laser interferometers are attached to said intermediate stage and movable therewith, for measuring distances in the first direction X between one or more first reflectors on the chuck and one or more plane mirror reflectors in the stationary base.

5. (Previously Presented) A system as claimed in claim 1, the chuck further comprising a cube corner reflector.

6. (Previously Presented) A system as claimed in claim 1, wherein the first and second main parts are attached to said intermediate stage for measuring respectively the distance in the third direction Z between the first elongated plane mirror reflector on the chuck and the elongated plane mirror reflector on the stationary base, and the distance in the third direction Z between the second elongated plane mirror reflector on the chuck and the elongated plane mirror reflector on the stationary base, which third direction Z is perpendicular to the first direction X and the second direction Y.

7. (Previously Presented) A method for positioning a product by means of a system comprising a chuck for supporting the product, an intermediate stage supporting said chuck, and a stationary base supporting said intermediate stage, whereby the chuck can move with respect to the intermediate stage in a first direction X, and the intermediate stage can move with respect to said stationary base in a second direction Y, the method comprising attaching at least a first and a second laser interferometer to the intermediate stage, the first and second laser interferometers respectively further comprising a first and a second main part including optical components for receiving and directing a first and a second laser, the first and second main parts being movable with the intermediate stage, and measuring the position of the chuck relative to the stationary base by measuring a first distance between a first elongated reflector on the chuck and an elongated reflector on the stationary base using the first laser interferometer, and a second distance between a second elongated reflector on the chuck and the elongated reflector on the stationary base using the second laser interferometer.

8. (Previously Presented) A method as claimed in claim 7, wherein the first and second elongated reflectors on the chuck are elongated in the first direction X and the elongated reflector on the stationary base is elongated in the second direction Y.

9. (Previously Presented) A method as claimed in claim 7, further comprising moving the chuck relative to the stationary base and measuring the position of the chuck relative to the stationary base during such movement.

9. RELATED EVIDENCE APPENDIX

No evidence has been submitted pursuant to §§ 1.130, 1.131, or 1.132 of this title nor any other evidence entered by the examiner and relied upon by Appellant in the appeal.

10. RELATED PROCEEDINGS APPENDIX

Appellant is not aware of any appeals or interferences related to the present application.